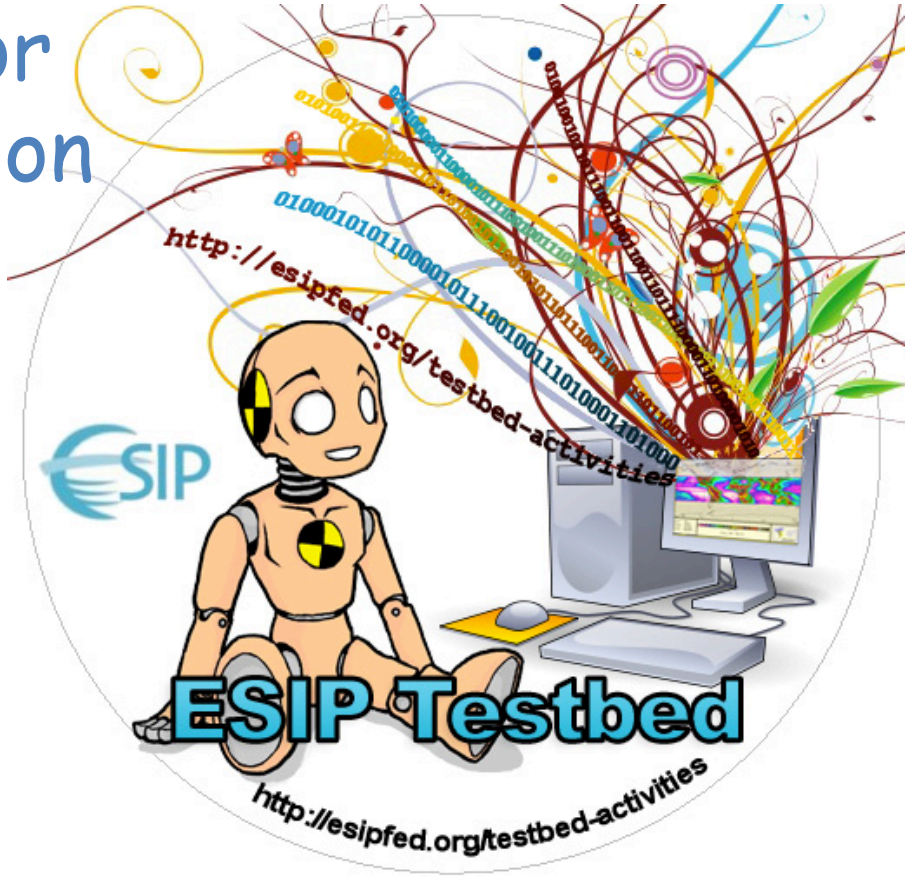
The ESIP Testbed

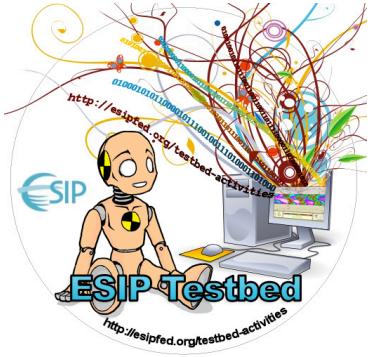
An Infrastructure for Community Collaboration



ESIP Winter Meeting

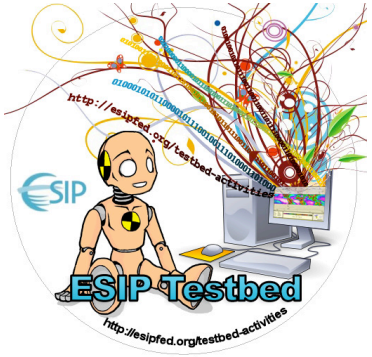
January 2012

Agenda



- Quick Survey
- Overview (Ken)
- Front Office – Big Picture Perspective (Carol)
- Brief Overview of Current Tasks (Task leads)
- Plans for Cloud Resources and Testing (Phil)
- Open Discussion (and quicker survey)

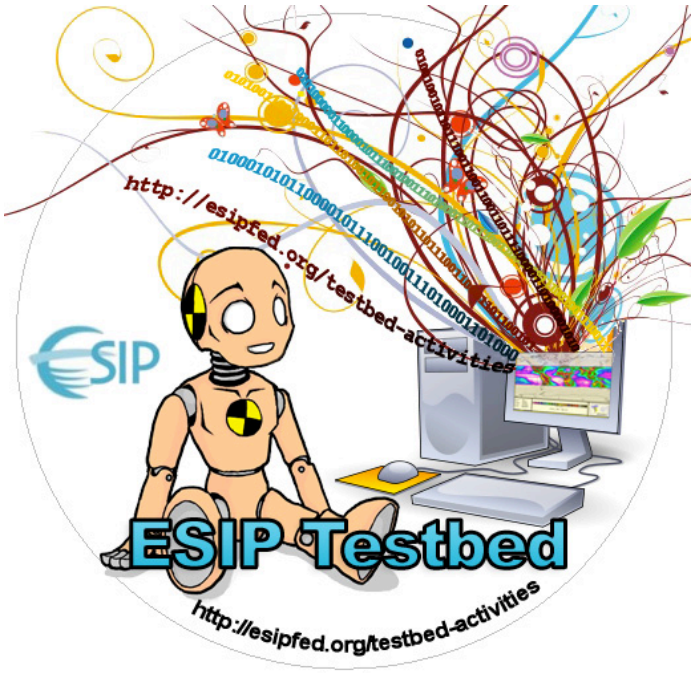
Quick Survey

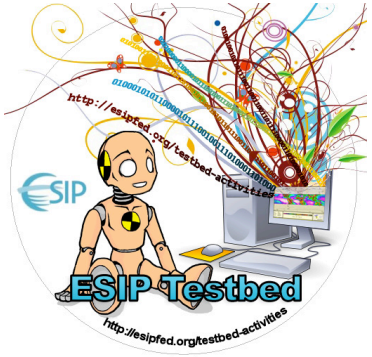


Who had no idea that an ESIP Testbed exists?

Quick Survey

If you were aware of the Testbed, have you ever used or interacted with any of the Testbed activities?





ESIP Testbed Overview

How we got to this point.

Organizational

- Originated from **the Products and Services Committee**
  - To encourage the development, use and improvement of **best science practices** to ensure the quality, usability, and breadth of data and resultant information, products, and services
  - To provide a Federation-wide forum for defining, developing and evaluating requirements for Federation **Earth science products**
  - To provide a Federation-wide forum for defining, developing and evaluating requirements for **product services and user services**
- Testbed Purpose
  - Provide an **environment to prototype**…
    - Standards (ISO)
    - Services (e.g. expert skills database)
    - Protocols (e.g. casting)
    - Technologies (e.g. drupal)
  - **Explore** best practices (E.g. data identifiers)
  - Provide a forum for **innovative collaboration** across ESIP
  - Improve **visibility and access** to products and services

Previous Activities

- Earlier funded activities
  - Expert Skills Database
  - Unique Data Identifiers
  - Semantic Registration of Data and Services
  - Application-specific Portals
- More information
  - http://wiki.esipfed.org/index.php/Testbed

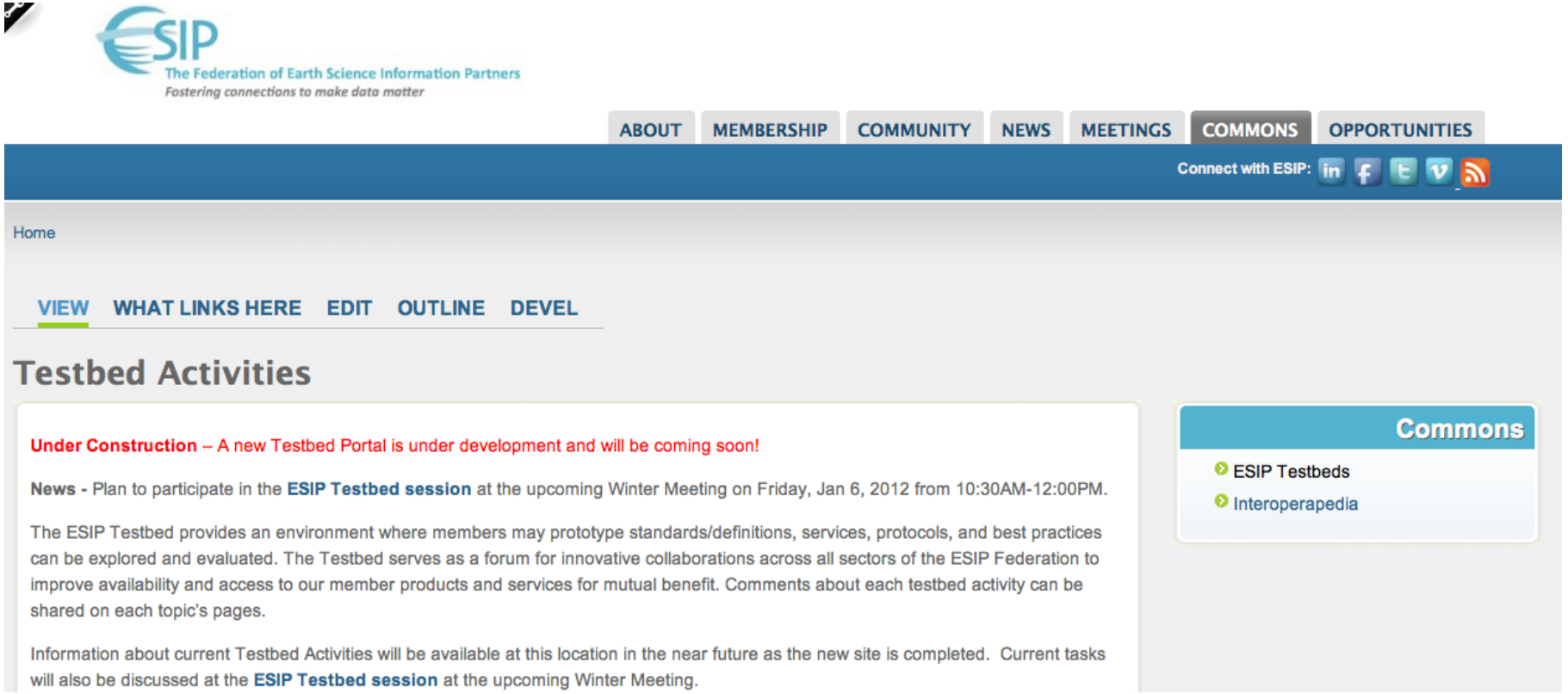
2011 Efforts

- Proposal for funding of new activities
  - Testbed Portal Development
  - Discovery Services and Clients
  - Data and Information Quality
  - Re-usable Metadata Authoring Tool
  - Data Stewardship
- RFP for Implementation of Tasks
- Establishment of Testbed Configuration Board
- More Information
  - http://wiki.esipfed.org/images/d/d5/Pstestbed11rev9.pdf

2012 and Beyond…

- Improve Visibility and Function of Testbed
- Work with Implementation Teams
- Integrate Information with ESIP Commons
- Consider New Activities/Tasks
- More Information
  - http://esipfed.org/testbed-activities

New Testbed Home…



http://esipfed.org/testbed-activities

ESIP Federation Testbed

Big Picture Perspective

ESIP Federation Core Strengths

- Knowledge and tech transfer by experts
- Innovation by community
- Community-driven approach identifies common needs across organizations, agencies, disciplines & works toward common solutions (i.e. incubator)
- Adoption by community is applied in local contexts

What Is A Testbed?

- A testbed is a structured approach for evaluating technology, software or even processes.
- In ESIP world, a testbed offers a platform for assessing member- and community-generated assets.

Why an ESIP Federation Testbed?

- Structured approach to evaluating ideas/ approaches/technologies
- Service to members and sponsors
- Community expertise tapped (as opposed to each member going it alone)
- Community-driven activities = broader potential for standard approaches
- Shared resource = efficiencies gained

Testbed Outputs

- Shared (vetted) resources for use by community & sponsors
- Recommendations for approaches (e.g. best practices, community conventions)
- Identifies new projects and collaboration opportunities

What It's Going to Look Like?

- Big Question!
- Challenge is for Products & Services Committee to identify Testbed platform needs
  - Computational
  - Tracking Mechanisms
  - Management/Policies
- Invitation to other ESIP groups to utilize Testbed

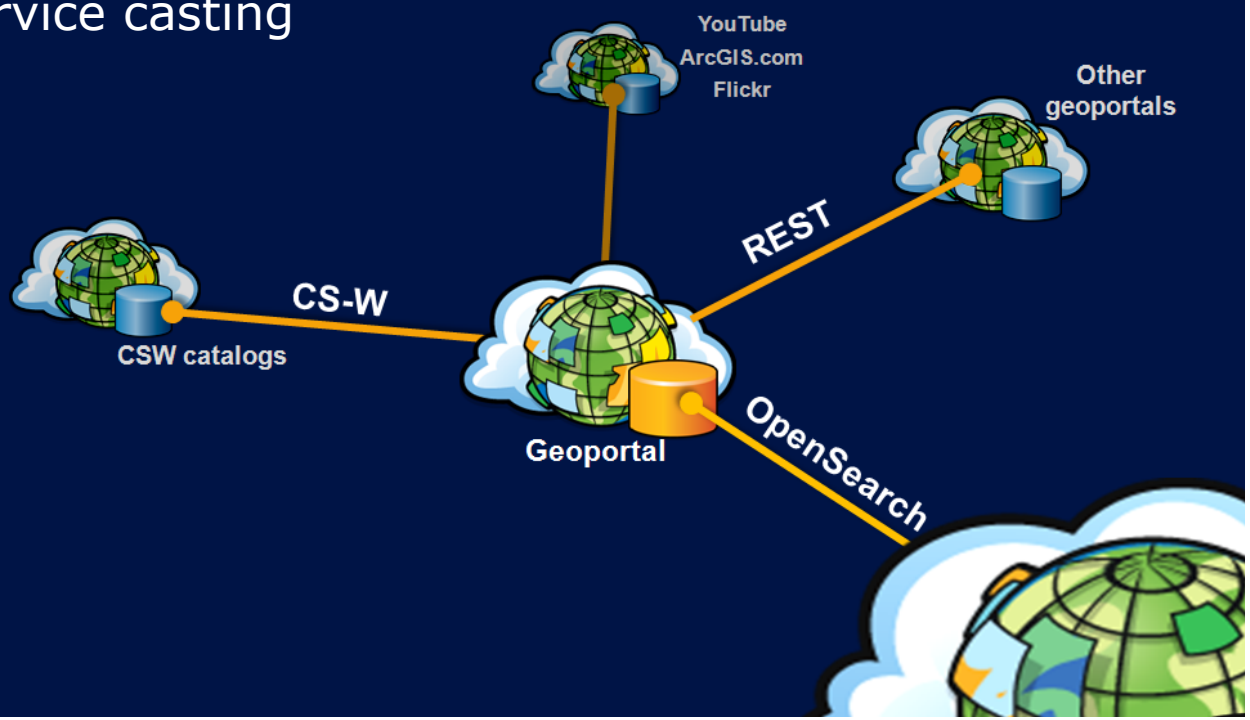
Current Tasks: Discovery Services

Sponsor: Discovery Cluster

Task Lead: Christine White and ESRI team

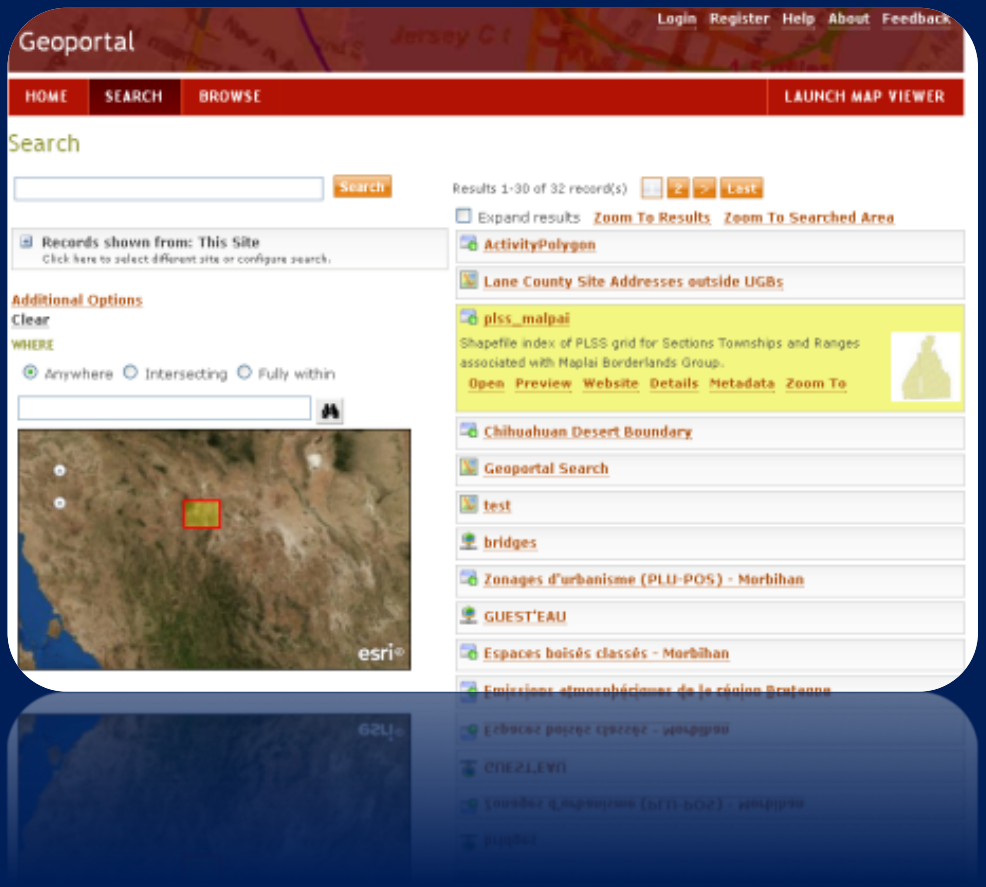
Discovery Cluster Task 2

- **Esri Geoportal Server** solution
- **Out of the box** resource advertisement, discovery, CSW endpoint, REST endpoint, OpenSearch endpoint
- **Customizations** for federated search of OpenSearch endpoints, data casting, and service casting



Esri Geoportal Server

- Web access point, but also protocol-based endpoints
- User management
- Metadata resource management
- Resource discovery
- Federated search
- Harvesting
- No-cost system setup possible with Open Source software



Current Tasks: Testbed Portal

Sponsor: Product & Services Committee

Task Lead: Chen Xu and GMU team

Develop and Deploy a Testbed Portal

Supported by the ESIP Products and Services Committee & the ESIP Testbed Configuration Board

Chen Xu, Jing Li, Chaowei Yang

Center of Intelligent Spatial Computing for Water/Energy Science (CISC)

George Mason University

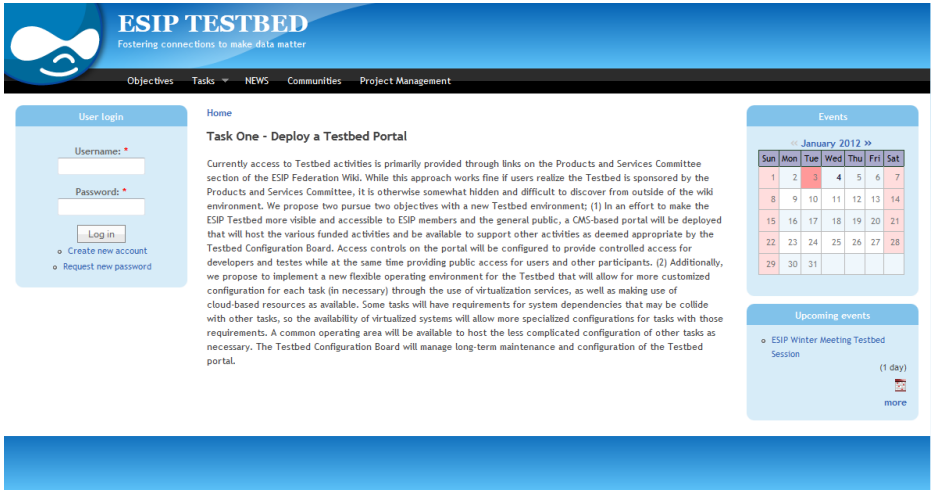
Issues and Goals

- Issues
  - Current testbed portal is wiki-based and functionality is limited;
  - Need a portal that is more visible and accessible for the public;
  - Need an environment that is more configurable and usable for testbed task developers.
- Goals
  - Support ESIP members to interact with hosted testbed activities;
  - Support interactivities between ESIP members and testbed task developers;
  - Make ESIP testbed activities more visible to the public.

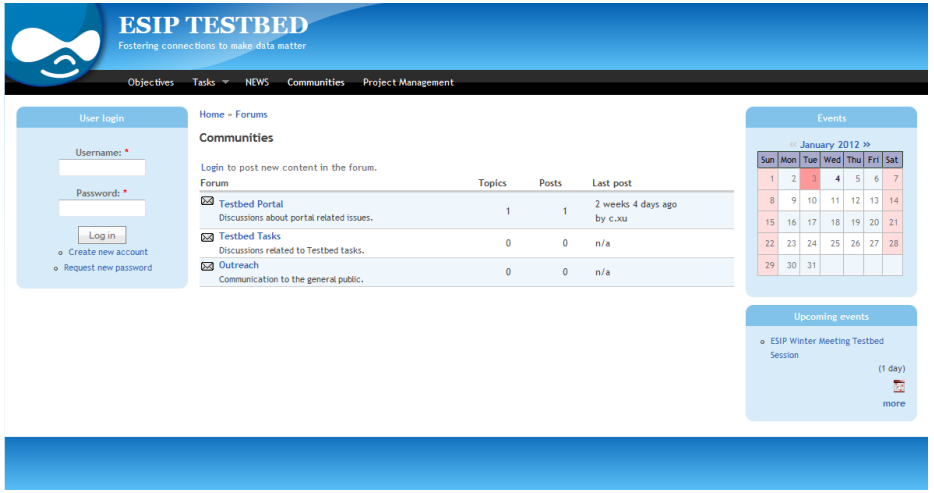
Benefits for the Earth Science User Community

- For the testbed developers
  - A environment for hosting funded activities;
  - A communication platform between the developers and the ESIP members.
- For the ESIP members
  - Conveniently access to various funded testbed activities;
  - Provide comments and feedback on the demonstrated technologies.
- For the public
  - A portal for easy access to testbed news and demonstrations.

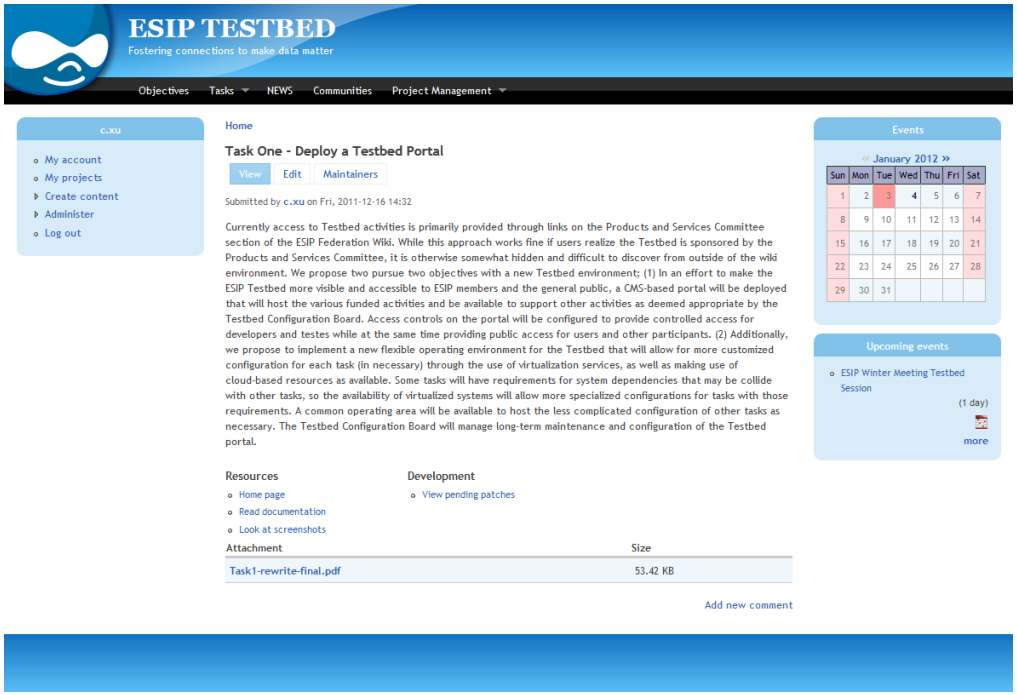
Testbed Task Introduction



Testbed Community Forums



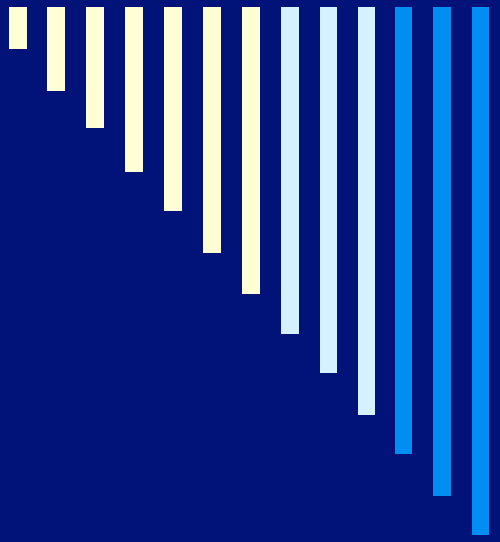
Testbed Project Management



Current Tasks: Data Stewardship

Sponsor: (**New**) Data Stewardship Committee

Task Lead: Nancy Hoebelheinrich and team



Data Stewardship & Preservation Cluster Identifier Testbed Activities

A Report for the ESIP Winter 2012 Meeting in Washington DC by Nancy Hoebelheinrich

Synopsis of Project

- Task: explore & document the operational & implementation issues resulting from assignment of citable Identifiers to data content resources at both the data set and granule / component level
- Two data sets used: 1 photographic images, 1 MODIS time series data
- So far, IDs assigned for 2.5 of the 9 ID schemes evaluated in DS&P cluster paper published in 2010 (DOI, ARK, PURL)

Issues noted to date

- IDs need to be known, else they don't identify (link to splash page, added to MD, etc.)
- When should IDs be assigned to the granule / component level?
- Maintenance issues, e.g., changes in descriptive MD that could result in changed citation, whose responsibility to make changes,
- Value for services associated with each ID scheme (resolution services, MD changes, making MD available to indexing services)

References

- http://wiki.esipfed.org/index.php/Preservation_and_Stewardship = sponsor
- http://wiki.esipfed.org/index.php/Interagency_Data_Stewardship/Identifiers#Summary_of_Issues_and_Results = tracking of project
- Contacts: Nancy Hoebelheinrich [nhoebel@kmotifs.com], Greg Janée [gjanee@eri.ucsb.edu]

Current Tasks: Metadata Editor

Sponsor: Information Technology and Interoperability Committee

Task Lead: Jerry Pan and team

A Generic Metadata Editor Supporting System Using Drupal CMS

Jerry Yun Pan[1], Nigel Banks[2]

[1] Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831-6407

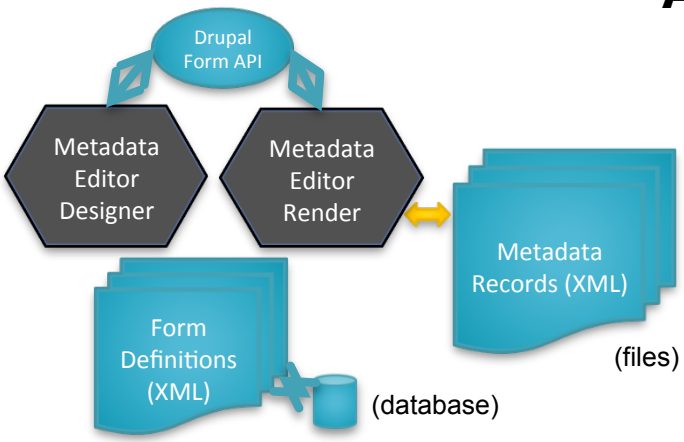
[2] Discovery Garden Inc., 118 Sydney Street, Charlottetown, Canada, C1A 1G431-6407

The Goal

Develop a generic, reusable software system to facilitate the support for multiple metadata standards and their variations

Approach

Drupal Content Management System (CMS) and its Forms API as the foundation framework



Features & Status

- Editor from design GUI ("Editor of Editors")
- Choose subset of a Schema (a "Profile")
- Custom Tags supported
- Stand-alone editor, or easy Integration to any Drupal-based system through APIs
- Flexible Theming (with Drupal themes and JQuery UI themes)

Work Plan

- Complete ISO 19115 support with sample profiles
- Complete Wizard forms
- Auto completion and “pick-list” support
- Import and export
- Integration with Drupal Node/View system (potential)
- Auto-generation of form definition from a schema file (potential)

Current Tasks: Data and Information Quality

Sponsor: Information Quality Cluster

Task Lead: Abdelmounaam Rezgui and GMU team

A Classification/Annotation Scheme for Data and Service Quality

A. Rezgui, Z. Gui, M. Sun, C. Yang

Center of Intelligent Spatial Computing for Water/Energy Science (CISC)

George Mason University

Sponsored by:

ESIP Products and Services Committee &
ESIP Testbed Configuration Board

IT Problem Addressed

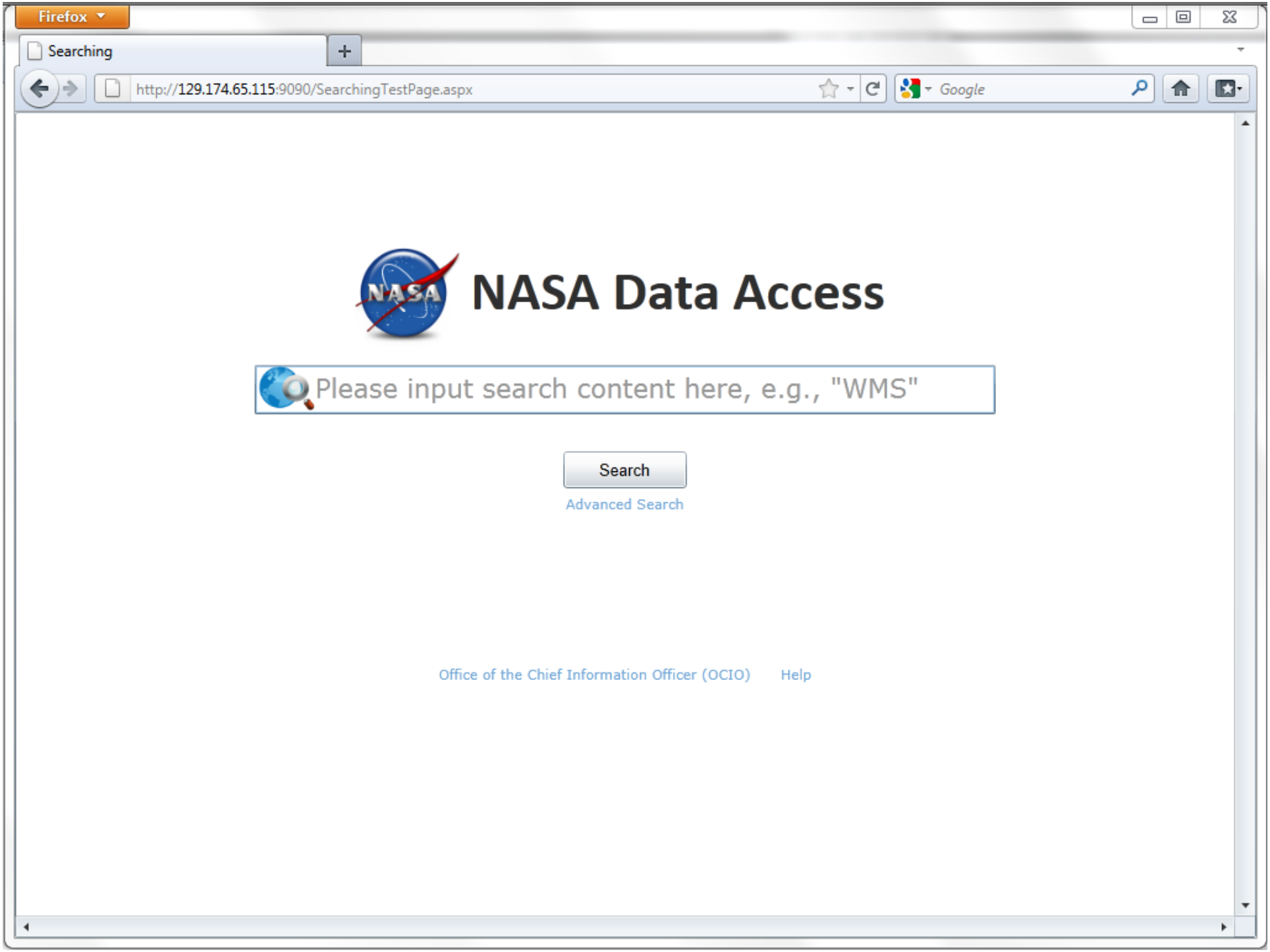
- Large number of ESIP data and services available online
  - Data/service consumers need a quality-aware system (source, accuracy, performance, reliability, etc.)
- Objective
  - Provide quality measures for ESIP products and services
- Approach
  - Develop an automatic classification/annotation system that assesses, monitors, and accurately reports on the quality of ESIP data and services

Benefits to Earth Science User Community

- Quality Model for ESIP Products and Services
  - **For Data**
    - Quality metrics, e.g., accuracy, precision, timeliness
    - Draw from several standards such as
      - ISO 8000 (international standard for data quality),
      - FIPS (Federal Information Processing Standard) spatial data quality standard,
      - ISO 19113 (for describing the quality of geographic information),
      - ISO 19114 (for evaluating and reporting the quality of geographic information)

Benefits to Earth Science User Community

- **For Services**
  - Quality metrics, e.g., performance, usability, reliability
  - Draw from established standards such as
    - OASIS WSQM (Web Service Quality Model)
    - ISO 9126 (software quality model).
  - Metadata Quality
  - User Feedback
- **Classification Engine** that automatically derives the quality of ESIP products and services based on the developed model.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Google
NASA Data Access
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Search
Advanced Search
Office of the Chief Information Officer (OCIO)
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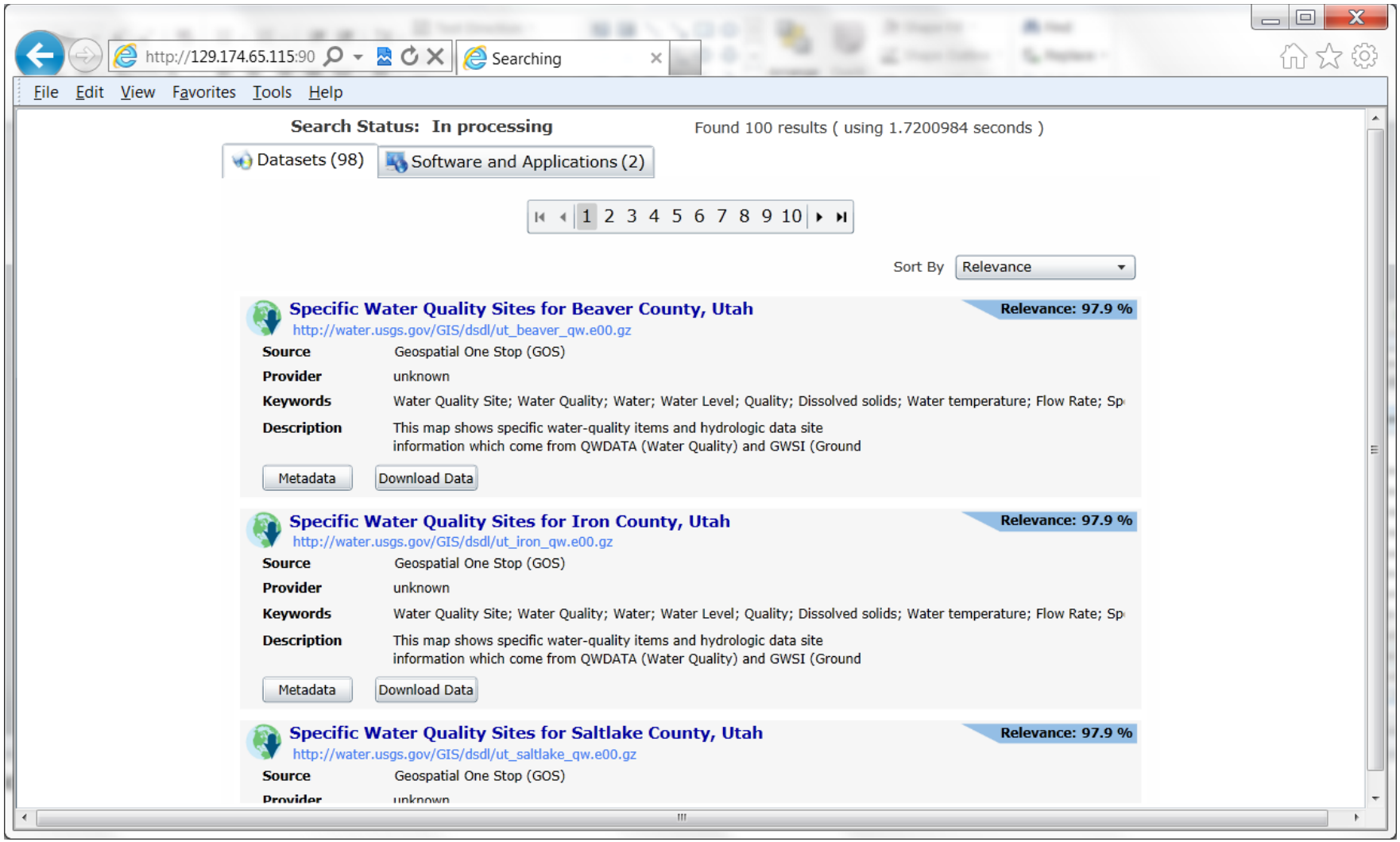
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Searching
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Search Status: In processing
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Datasets (98)
Software and Applications (2)
1 2 3 4 5 6 7 8 9 10
Sort By
Relevance
Specific Water Quality Sites for Beaver County, Utah
Relevance: 97.9 %
http://water.usgs.gov/GIS/dsdl/ut_beaver_qw.e00.gz
Source
Geospatial One Stop (GOS)
Provider
unknown
Keywords
Water Quality Site; Water Quality; Water; Water Level; Quality; Dissolved solids; Water temperature; Flow Rate; Sp
Description
This map shows specific water-quality items and hydrologic data site information which come from QWDATA (Water Quality) and GWSI (Ground
Metadata
Download Data
Specific Water Quality Sites for Iron County, Utah
Relevance: 97.9 %
http://water.usgs.gov/GIS/dsdl/ut_iron_qw.e00.gz
Source
Geospatial One Stop (GOS)
Provider
unknown
Keywords
Water Quality Site; Water Quality; Water; Water Level; Quality; Dissolved solids; Water temperature; Flow Rate; Sp
Description
This map shows specific water-quality items and hydrologic data site information which come from QWDATA (Water Quality) and GWSI (Ground
Metadata
Download Data
Specific Water Quality Sites for Saltlake County, Utah
Relevance: 97.9 %
http://water.usgs.gov/GIS/dsdl/ut_saltlake_qw.e00.gz
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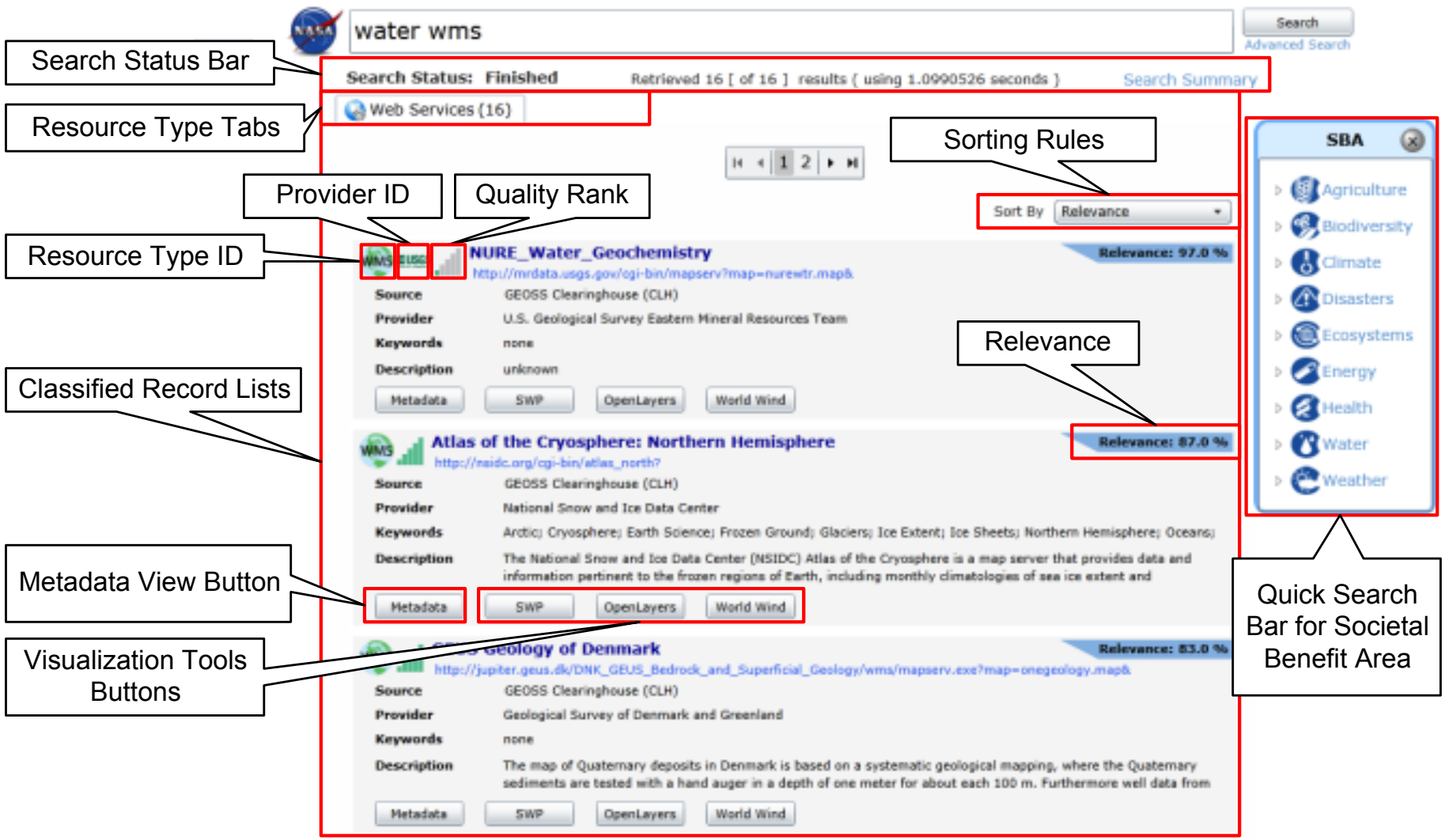
Geospatial One Stop (GOS)
Provider
unknown

GUI (results page)



water

Search

Advanced Search

Search Status: Finished Retrieved 5000 [of 271046] results (using 41.1683547 seconds) Search Summary

Datasets (4987) | Web Services (2) | Websites and Documents (8) | Software and Applications (3)

1

Sort By Relevance

Atlas of the Cryosphere: Northern Hemisphere Relevance: 87.0 %

http://nsidc.org/cgi-bin/atlas_north?

Source	GEOSS Clearinghouse (CLH)
Provider	National Snow and Ice Data Center
Keywords	Arctic; Cryosphere; Earth Science; Frozen Ground; Glaciers; Ice Extent; Ice Sheets; Northern Hemisphere; Oceans;
Description	The National Snow and Ice Data Center (NSIDC) Atlas of the Cryosphere is a map server that provides data and information pertinent to the frozen regions of Earth, including monthly climatologies of sea ice extent and

Metadata | SWP | OpenLayers | World Wind

Atlas of the Cryosphere: Northern Hemisphere Relevance: 87.0 %

http://nsidc.org/cgi-bin/atlas_north?

Source	GEOSS Clearinghouse (CLH)
Provider	unknown
Keywords	Arctic; Cryosphere; Earth Science; Ice Extent; Ice Sheets; Northern Hemisphere; Oceans; Polar; Sea Ice; Sea Ice Cc
Description	The National Snow and Ice Data Center (NSIDC) Atlas of the Cryosphere is a map server that provides data and information pertinent to the frozen regions of Earth, including monthly climatologies of sea ice extent and

Metadata

1

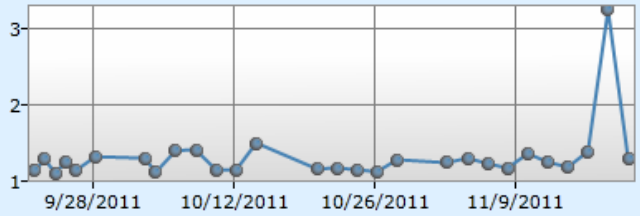
SBA

- Agriculture
- Biodiversity
- Climate
- Disasters
- Ecosystems
- Energy
- Health
- Water
- Weather

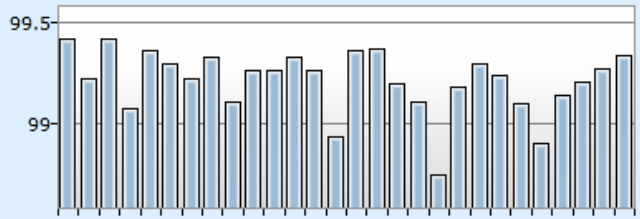
Office of the Chief Information Officer (OCIO) Help

Atlas of the Cryosphere: Northern Hemisphere

Response Time(s)



FGDC Score(%)



From: 9/22/2011 To: 11/20/2011 Timespan 60

Query | Latest | Previous | << Hide Layers QoS Panel

- All layers (97)
  - satellite imagery, Jan
  - satellite imagery, Jan
  - satellite imagery, July
  - satellite imagery, July
  - sea ice extent, Januar
  - sea ice extent, Februa
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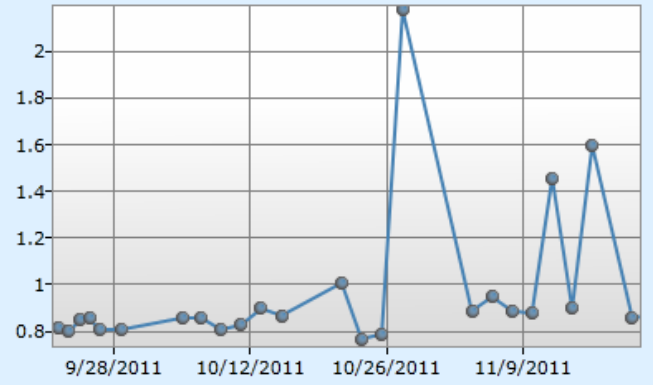
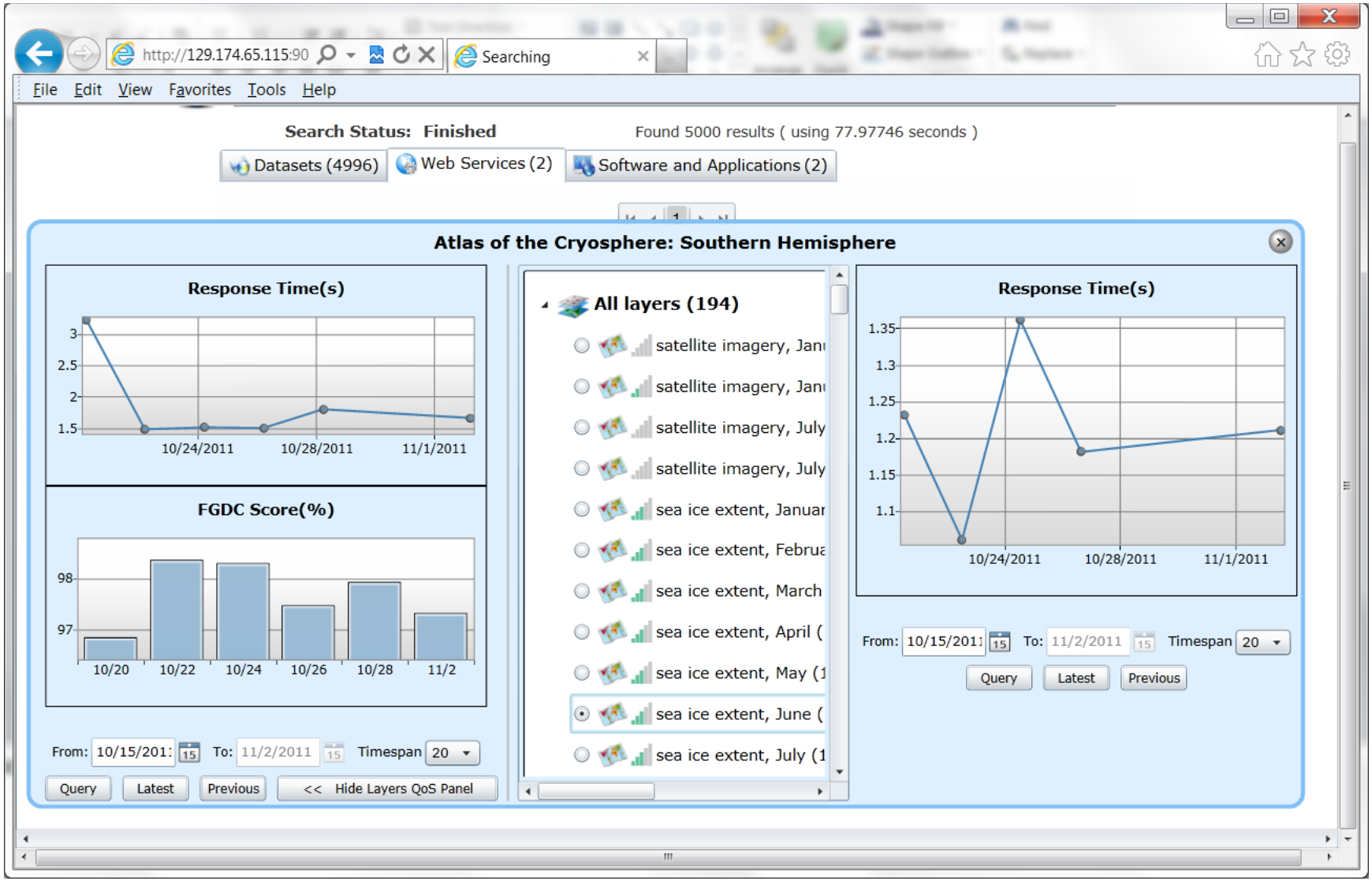
  - sea ice extent, April (
  - sea ice extent, May (1
  - sea ice extent, June (
  - sea ice extent, July (1

Response Time(s)



From: 9/22/2011 To: 11/20/2011 Timespan 60

Query | Latest | Previous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Datasets (4996)
Web Services (2)
Software and Applications (2)
Atlas of the Cryosphere: Southern Hemisphere
Response Time(s)
3
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2
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10/24/2011
10/28/2011
11/1/2011
FGDC Score(%)
98
97
10/20
10/22
10/24
10/26
10/28
11/2
From: 10/15/201
To: 11/2/2011
Timespan 20
Query
Latest
Previous
<< Hide Layers QoS Panel
All layers (194)
satellite imagery, Jan
satellite imagery, Jan
satellite imagery, July
satellite imagery, July
sea ice extent, Januar
sea ice extent, Februa
sea ice extent, March
sea ice extent, April (
sea ice extent, May (1
sea ice extent, June (
sea ice extent, July (1
Response Time(s)
1.35
1.3
1.25
1.2
1.15
1.1
10/24/2011
10/28/2011
11/1/2011
From: 10/15/201
To: 11/2/2011
Timespan 20
Query
Latest
Previous

Future Tasks: Cloud Resources

Sponsor: Cloud Computing Cluster

ESIP Cloud Computing Testbed Initiative

A progress test, discussion, report and collaboration about what is needed to support a cloud computing testbed for producing lessons learned and best practice for ESIP members to assess, test, and adopt cloud platforms for their research, development, and education:

- Develop community consensus matrix of requirements for cloud computing adoption,
- Identify cloud resources (Amazon, Microsoft, Nebula, Private Cloud),
- Identify potential applications to be running on the resources,
- An execution plan with a target of presenting in the summer meeting and EarthCube.

ESIP Cloud Computing Testbed Initiative

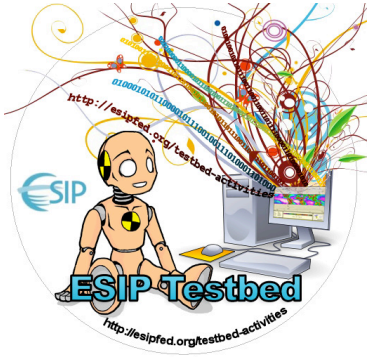
- Scientific and Application Use Cases
- Testbed Cloud Resources (Commercial, Government, Community, etc.)
- Coordinated through monthly telecons
- Define Cloud Computing Requirements
- A virtual collaborative infrastructure
- A cloud computing knowledge base by and for ESIP members

Expected Results

- Documents for
  - How to run cloud computing services.
  - How to migrate Earth science applications onto cloud environment and how to best leverage the cloud.
  - Help us mature the open source foundation.
  - Develop a community agreed matrix for testing cloud.
- Cloud computing resources
- Best configured virtual images for a number of applications
- EarthCube
- Summer meeting

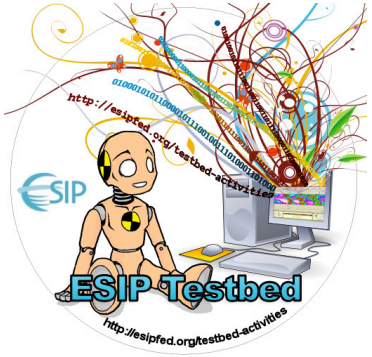
Future Tasks:[Your Ideas…]

Quick Wrap-up Survey



Who would have interest in utilizing the Testbed to try out products and services or discover information from existing activities?

Quick Wrap-up Survey



What would you want to get out of the Testbed?

Open Discussion